REMARKS

Claims 1-16 are pending in this application. Applicant has added new claims 15 and 16 to claim additional features of the invention and to provide varied protection for the claimed invention. Applicant has not amended previously pending claims 1-14.

Claims 1-3 and 6 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Yamamoto (U.S. Patent No. 6,064,079). Claims 4 and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto as applied to claim 1 above and further in view of Fukuda (JP 2003-115610). Claims 7-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto in view of Kaneyama (U.S. Patent Application Publication No. US 2002/0014632). Claims 11-14 are understood as standing rejected under 35 U.S.C. §103(a) as unpatentable over Yamamoto in view of Fukuda.

Applicant respectfully traverses these rejections in the following discussion.

I. THE CLAIMED INVENTION

The invention of claim 1, for example, is directed to a group III-nitride-based compound semiconductor device, that includes a first p-layer and a second p-layer, the first p-layer and the second p-layer including an acceptor impurity, and an intermediate layer provided between the first p-layer and the second p-layer, the intermediate layer contacting a surface of the first p-layer and a surface of the second p-layer. The intermediate layer includes a donor impurity at a concentration distribution that is based on activation rates of the acceptor and the donor impurities, such that at a specific temperature a compensation occurs to reduce a carrier concentration in said intermediate layer (Application at page 3, lines 4-15).

This structure is important because by compensating for the concentration of the acceptor impurity, a hole concentration in the intermediate layer is substantially the same as that in a group III-nitride-based compound with no impurity added (Application at page 3, lines 16-25). Furthermore, the claimed invention may improve the ability to withstand electrostatic voltages, as well as a reduction of driving voltage (Application at page 2, line 21-page 3, line 3).

II. THE PRIOR ART REFERENCES

A. The Yamamoto Reference

The Examiner alleges that Yamamoto teaches the claimed invention of claims 1-3 and 6. Applicant respectfully submits, however, that Yamamoto does not teach or suggest every feature of the claimed invention.

For example, Yamamoto fails to teach or suggest and an intermediate layer provided between the first p-layer and the second p-layer, the intermediate layer contacting a surface of the first p-layer and a surface of the second p-layer, wherein the intermediate layer includes a donor impurity at a concentration distribution that is based on activation rates of the acceptor and the donor impurities, such that at a specific temperature a compensation occurs to reduce a carrier concentration in said intermediate layer.

The Examiner alleges that Yamamoto teaches a semiconductor device including a first p-layer 15, 16 and a second p-layer 16, 18, each including an acceptor impurity. The Examiner further alleges that Yamamoto includes an intermediate layer 17, 34 doped with a donor impurity. The Examiner further alleges that the intermediate layer is doped

with a donor impurity (see Office Action dated July 13, 2007 at page 2). The Examiner, however, is clearly incorrect.

With respect to Figures 1A and 2A, of Yamamoto, the alleged first p-layer 15 and the alleged second p-layer 18 do not contact either alleged intermediate layer 17 or alleged intermediate layer 34. Therefore, alleged first p-layer 15 and alleged second p-layer 18 fail to teach or suggest the specific structure recited in the claimed invention.

Figure 2A, of Yamamoto, illustrates an upper and a lower p-type layer 16. The two p-type layers labeled 16 appear to contact the alleged intermediate layer 17 and the alleged intermediate layer 34.

Applicants submit, however, that the alleged intermediate layer 17 is not analogous to the intermediate layer of the claimed invention.

That is, the Examiner alleges, "The intermediate layer (17, 34) is doped with a donor impurity concentration (column 5, lines 25-55)." (See Office Action dated July 13, 2007 at page 2). The Examiner, however, is clearly incorrect.

That is, this passage of Yamamoto merely discloses that the p-type modulation layer 34 is doped with Si (col. 5, lines 38-42). Yamamoto, however, does not teach or suggest that the alleged intermediate layer 17 is doped with Si.

Accordingly, the alleged intermediate layer 17 fails to teach or suggest the specific structure recited in the claimed invention.

Furthermore, Applicant submits that the p-type modulation layer 34 of Yamamoto is not analogous to the intermediate layer of the claimed invention.

That is, the p-type modulation layer 34 of Yamamoto does not include a donor impurity at a concentration distribution that is based on activation rates of the acceptor and the donor impurities.

The Examiner concedes that Yamamoto does not teach or suggest this feature of the claimed invention. Indeed, the Examiner merely alleges, 'The concentration of donor impurity will inherently have a relation to the activation rates of the acceptor and donor impurities and also the temperature of the device." (See Office Action dated July 13, 2007 at page 2).

Applicant submits that the Examiner has clearly failed to meet his burden for establishing that this feature of the claimed invention is inherent.

Applicant points out that "[t]he fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." (See M.P.E.P. § 2112 IV; emphasis in M.P.E.P. itself). Indeed, "[t]o establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill'." (See M.P.E.P. § 2112 IV; emphasis added by Applicant).

Furthermore, "[i]n relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." (See M.P.E.P. § 2112 IV; emphasis added by Applicant).

Applicant points out that the Examiner has not provided any basis in fact and/or technical reasoning or extrinsic evidence to support his vague allegation of inherency.

Indeed, the Examiner's allegation appears to be nothing more than the Examiner's personal opinion.

Even assuming, *arguendo*, that the Examiner's allegation regarding the alleged inherency of the donor impurity concentration is correct, Yamamoto still fails to teach or suggest the specific structure recited in the claims.

That is, the p-type modulation layer 34 of Yamamoto does not contact a surface of the first p-layer and a surface of the second p-layer. Indeed, as illustrated in Figure 2A of Yamamoto, the p-type modulation layer is formed inside of the alleged p-layer 16 (e.g., see Yamamoto at column 5, lines 27-60).

Moreover, Yamamoto does not teach or suggest, "*wherein a concentration distribution of the donor impurity in the intermediate layer is based on activation rates of the acceptor and the donor impurities, such that at a specific temperature a compensation occurs to reduce a carrier concentration in said intermediate layer*", as recited in the claimed invention.

The Examiner has not given patentable weight to this feature of the claimed invention, alleging, "The limitation must distinguish from the prior art in terms of structure rather than function." (See Office Action dated July 13, 2007 at page 2).

As Applicant previously pointed out to the Examiner, however, this feature of the claimed invention is not a functional limitation. Rather, the independent claims describe a concentration distribution, which is a physical structural aspect of this layer.

Therefore, Yamamoto does not teach or suggest every feature of the claimed invention. Accordingly, Applicant respectfully requests the Examiner to reconsider and withdraw this rejection.

B. The Fukuda Reference

The Examiner alleges that the combination of Yamamoto and Fukuda teaches or suggests the claimed invention of claims 4, 5, and 11-14.

Applicant respectfully submits that claims 4, 5, and 11-14 are allowable for similar reasons to those set forth above in section A.

Accordingly, Applicant respectfully requests the Examiner to reconsider and withdraw the rejections based on the alleged combination of Yamamoto and Fukuda.

C. The Kaneyama Reference

The Examiner alleges that the combination of Yamamoto and Kaneyama teaches or suggests the claimed invention of claims 7-10.

Applicant respectfully submits that claims 7-10 are allowable for similar reasons to those set forth above in section A.

Accordingly, Applicant respectfully requests the Examiner to reconsider and withdraw this rejection.

III. NEW CLAIMS

Applicant has added new claims 15 and 16 to claim additional features of the invention and to provide varied protection for the claimed invention. These claims are independently patentable because of the novel and non-obvious features recited therein.

Applicant submits that new claims 15 and 16 are patentable at least based on similar reasons to those set forth above with respect to claims 1-14.

IV. NON-RESPONSIVENESS OF OFFICE ACTION

Applicant points out, "Where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of applicant's argument and answer the substance of it." (See M.P.E.P. § 707.07(f)).

In the Office Action, the Examiner states, "Applicant's arguments with respect to claims 1 through 11 have been considered but are moot in view of the new ground(s) of rejection." (See Office Action dated July 13, 2007 at page 9).

Applicant submits, however, that the Examiner has not presented a new ground of rejection. Indeed, the Examiner has maintained the identical rejections from the previous Office Action.

Accordingly, Applicant respectfully submits that the Office Action is non-responsive to Applicant's traversal arguments. If the Examiner wishes to maintain these rejections, then Applicant requests the Examiner to respond to each of Applicant's traversal arguments and answer the substance of the traversal arguments.

IV. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1-16, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. Applicant respectfully requests the Examiner to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, Applicant requests the Examiner to contact the undersigned at the local

telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

Applicant hereby authorizes the Commissioner to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: October 9, 2007

Scott M. Tulino, Esq.
Registration No. 48,317

Sean M. McGinn, Esq.
Registration No. 34,386

MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC
8321 Old Courthouse Road, Suite 200
Vienna, Virginia 22182-3817
(703) 761-4100
Customer No. 21254